Common Crop Formulas

Round Grain Bin Volumes

Bushels/bin = $(D^2 \times 0.7854 \times H) \times 0.8$

Cone = $\dfrac{(D^2 \times 0.7854 \times H) \times 0.8}{3}$

D = diameter of the bin
H = height of the bin

Sprayer Calibration Formulas

GPM = $\dfrac{OPM}{128}$

GPM = gallons per minute
OPM = ounces per minute

MPH = $\dfrac{Distance(feet) \times 60}{Time(seconds) \times 88}$

MPH = miles per hour

GPA = $\dfrac{GPM \times 5940}{MPH \times W}$

GPA = gallon per acre
MPH = miles per hour
W = spray width per nozzle in inches

Acres Covered Per Hour by Equipment

$\dfrac{(Speed \times Width \times Efficiency)}{8.25}$

Grain Drill Calibration

seed planted = $\dfrac{43{,}560 \times \text{\# seed collected}}{\text{drill width} \times \text{strip length}}$

strip length in feet = 1.1 x # revolutions x wheel circumference(feet)

Estimating Grain Yield

1) Select the appropriate length of row to measure 1 square foot.

Row space	Length of row Equal to 1 sq. ft.
6	24
7	20.6
8	18
10	14.4
12	12
14	10.3

2) Determine average number of kernels per head.

3) Determine the number of heads per square foot.

4) Calculate the number of seeds per square foot:

$$\frac{heads}{sq.\ ft.} \times \frac{seeds}{head} = \frac{seeds}{sq.\ ft.}$$

5) Divide seeds per square foot by conversion factor to get yield.

Crop	Factor
Wheat	20
Barley (2 row)	12
Barley (6 row)	14

6) $\dfrac{\textbf{seeds/sq. ft.}}{\textbf{conversion factor}} = \dfrac{\textbf{bushel grain}}{\textbf{acre}}$